PCB SAMPLING PLAN

Evaluate PCB Remediation Aboard USS Kittiwake (ASR-13)

EPI Project No. 27458

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PCB Sampling Plan
for
Ex-USS Kittiwake (ASR-13)

Environmental Profiles, Inc. (EPI) has developed this sampling plan for the ex-USS Kittiwake. The plan addresses comments in a letter from Ms. Laura Johnson, US EPA, Ocean and Coastal Protection Division, Marine Pollution Control Branch, dated August 10, 2007, which was submitted to the Cayman Islands Tourism Association (CITA). The letter from Ms. Johnson was submitted to CITA in response to the PCB remediation plan sent by CITA to the US Maritime Administration on May 1, 2007.

The CITA remediation plan described the results of a 2006 PCB survey aboard the vessel, which identified an area in the machinery space (B-204-E) as having surface PCB concentrations in excess of 50 parts per million (ppm). The CITA, through its agent, Dominion Marine Group, Ltd, has proposed to remediate the contamination by cutting and removing from the vessel all metal and paint from the affected area.

This plan sets forth the procedures to be followed for post-remedial sampling conducted pursuant to the remediation of surface PCB contamination as described in the preceding paragraph.

1.0 The Purpose and Objectives of the Sampling.

1.1 Paint samples shall be collected and analyzed for the purpose of evaluating the effectiveness of PCB remediation performed in compartment B-204-E of the ex-USS Kittiwake (ASR-13).

1.2 The evaluation will be performed by means of sample collection using industry-accepted sample strategies and approved sampling and analytical methods.

2.0 Type(s) of samples to be collected.

2.1 Individual bulk samples of surface paint will be collected.

2.2 None of the bulk samples will be composited.

2.3 The paint samples will be obtained such that all painted layers at a particular sample location will be included in each sample.

3.0 Sample collection to verify remediation related to compartment B-204-E.

3.1 The statistical sample strategy will be based on guidelines published by the US EPA, and **may include relevant portions** of the following:

a) Compliance with Toxic Substances Control Act (TSCA) PCB Disposal Regulations: Sampling and Analyzing Paint on Metal Surfaces of Vessels Being Scrapped for Metal Recovery

b) Verification of PCB Spill Cleanup by Sampling and Analysis (OTS-1985)

c) Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup (OTS-1986)

We understand the limitations associated with the preceding publications and acknowledge that they are not relevant or applicable to this project in their entirety. We intend to rely only on those portions that support the statistical methods presented in this outline.

3.2 The number of samples collected will be determined based on the size of the area remediated, with the locations laid out in a hexagonal grid and situated on the remaining surface adjacent to the edge of the removed surface(s).

3.3 The exact size of the area to be remediated has not been determined.

3.3.1 If the radius of the remediated area is less than 4-feet, then six paint samples will be taken (see Figure 1).

3.3.2 If the radius of the remediated area is greater than 4-feet but less than 10-feet, then 12 samples will be taken (see Figure 2).

3.3.3 While not anticipated, 18 samples will be taken if the remediated area is greater than 10-feet but less than 20-feet (see figure 3).

3.4 The sample size shall be an area measuring approximately 30 centimeters by 30 centimeters, and the depth of the sample will be from the painted surface to the bare metal substrate, with the goal of obtaining a 50 gram sample; less than 50 grams may be obtained if deemed appropriate by the laboratory.

3.5 All samples will be collected using paint scrapers. Sample tools will be cleaned prior to collecting each sample.

3.6 Personnel collecting samples will use disposable rubber gloves, which will be changed between the collection of each sample.

3.7 Samples will be placed in either glass jars or manila envelopes. Each sample will be labeled with a unique sample number, along with the general sample location.

3.8 All samples will be logged on a sampling form, and will include information such as vessel name, sample number, sample description/location, the sample date, and the name of person who collected the sample.

3.9 Each sample location will be marked with bright-colored spray paint and photo documented, with the photograph number corresponding to the uniquely assigned sample number.

3.10 In the event a sample cannot be obtained from its proposed location, an alternate sample location will be selected. Alternate locations may be needed if, for example, a selected location is at a porthole, bulkhead opening, or otherwise not accessible.

3.11 The alternate sample location will be as close as feasible to the proposed sample location, at a distance equal or closer to the remediated area, but not further away.

3.12 A diagram of proposed sampling locations has been prepared for the sample strategies proposed in Items 3.3.1, 3.3.2, and 3.3.3 above.

3.12.1 Sample diagram based on a remediation area with a radius of less than 4-feet (see Figure 1).

3.12.2 Sample diagram based on a remediation area with a radius of more than 4-feet and less than 10-feet (see Figure 2).

3.12.3 Sample diagram based on a remediation area with a radius of more than 10-feet and less than 20-feet (see Figure 3).

3.13 Decontamination process for re-usable sampling equipment.

3.13.1 Re-usable sampling equipment will be cleaned and/or decontaminated to avoid cross-contamination between samples and/or sample locations.

3.13.2 The sampling equipment will be pre-cleaned before the site visit by rinsing with solvent and wiping the equipment down.

3.13.3 Equipment will also be cleaned with solvent between samples and then wiped with a single use, disposable towel.

4.0 Waste and trash handling procedures.

4.1 Waste generated from the sampling process, including but not limited to disposable gloves, towels, tools, discarded sample bags/containers, and other disposables will be placed into a bag designated for such purpose.

4.2 The materials will be retained until the sample results are available for review.

4.3 If all samples contain less than 50 ppm PCB, then the materials will be disposed of as trash.

4.4 If any samples contain greater than 50 ppm PCB, then the materials will be disposed of as contaminated waste.

5.0 Field QA/QC procedures, including blanks, duplicates, and splits.

5.1 Quality Control procedures will begin with the collection of the first sample.

5.2 Each sample will be logged on a sample form and shall include the sample number, sample location, date of collection, and the name of person collecting the sample (see Section 3.8).

5.3 A sample diagram, indicating the location and sample number, will be included.

5.4 The samples will be submitted to an accredited laboratory facility following chain-of-custody procedures. Chain of custody provides conclusive written proof that the samples were taken, transferred, prepared, and analyzed in an unbroken line as a means to maintain sample integrity.

5.5 Field blanks will be collected at a rate of 10% of the total number of paint samples taken, with a minimum of two blanks collected. The purpose of field blanks is to demonstrate that the sampling equipment has not been contaminated. If only two field blanks are taken, they will be taken before and after the field sampling has occurred. Additional blanks, if collected, will be obtained while the field sampling is in progress.

5.6 Duplicate samples will be collected from 10% of the sample locations, with a minimum of two duplicates collected.

5.7 No split samples are anticipated.

6.0 The approved analytical method(s) to be employed.

6.1 Analysis protocols will be selected from among those listed in the EPA SW-846 listings.

6.2 Based on the potential variety of Aroclor compounds present, we propose to use EPA Method SW-846 8082 with Soxhlet Extraction. Soxhlet extraction will be based on EPA's preferred method, which is SW-846 3540C, with extract cleanup performed based on SW-846 3600.

6.3 We propose to submit the samples to Clayton Group Services (Bureau Veritas) or other qualified and accredited laboratory for analysis. The laboratory selected for analysis shall demonstrate prior documented experience performing PCB analysis with Soxhlet Extraction.

7.0 The criteria for classifying a sample result as a negative finding.

7.1 A result showing PCB content between Non-Detect and <50 ppm for ALL samples shall be considered a negative finding and indicative of an effective remediation, provided the limit of detection is < 50 ppm.

7.2 EPI will request that the analytical laboratory responsible for analyzing the bulk samples attain the lowest Limit of Detection feasible. Based on our previous experience, the LOD may be 25 ppm or less.

7.3 Any sample results showing a PCB content ≥50 ppm shall imply a positive finding, indicating the area has not been successfully remediated.

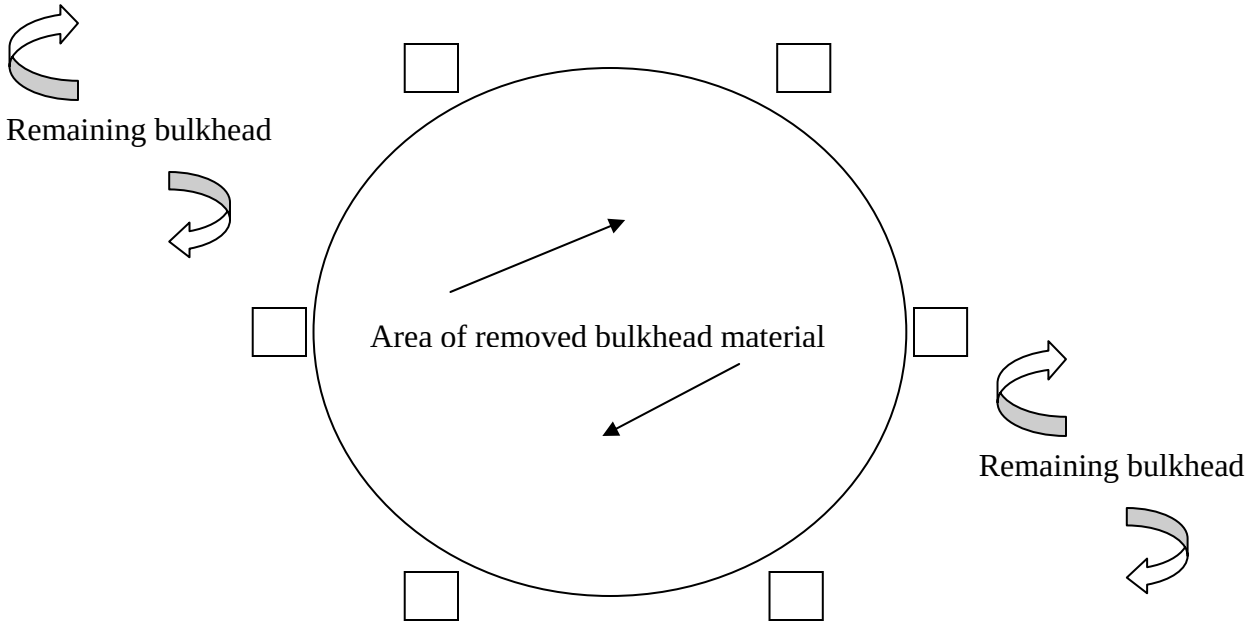

Figure 1. Location of sampling points in a 6-point grid where the outer boundary of the contaminated area is 4-feet or less from the center. The distance between adjacent sample points will be less than or equal to 0.87 times the radius of the contaminated area (0.87r).

= Sample location

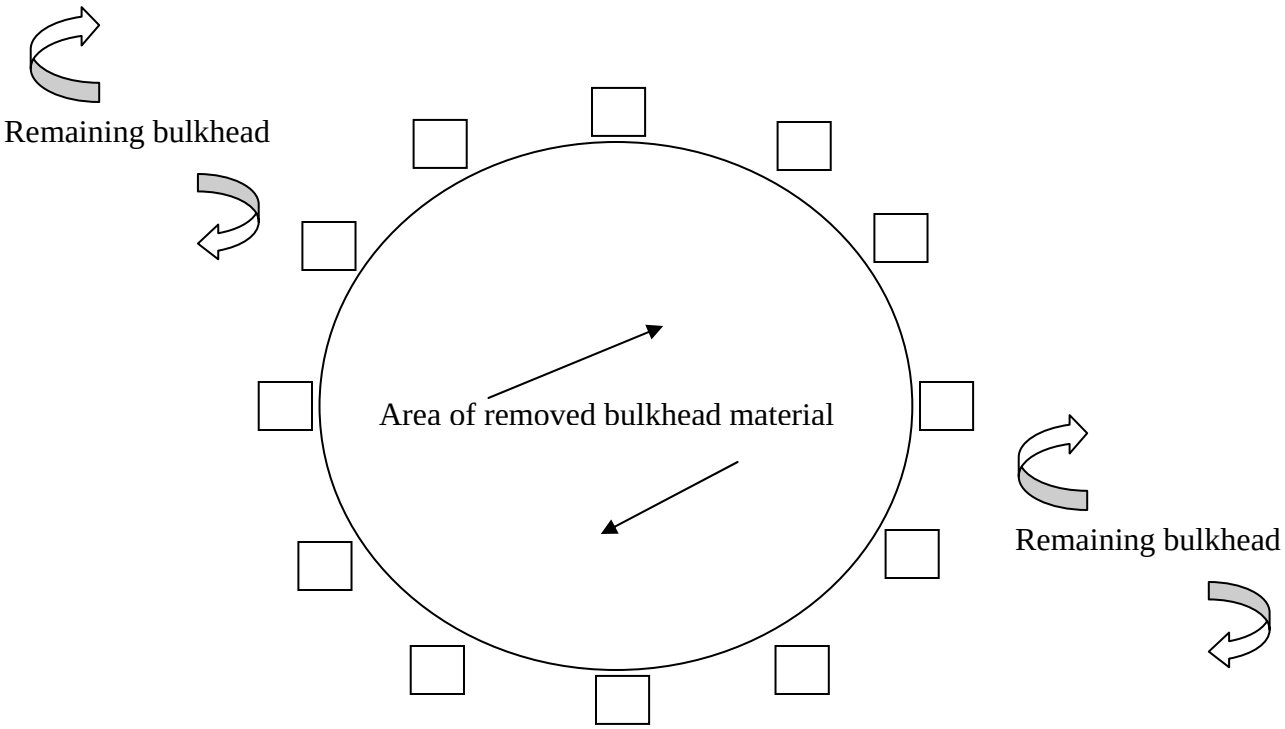

Figure 2. Location of sampling points in a 12-point grid where the outer boundary of the contaminated area is more than 4-feet but less than 10-feet from the center. The distance between adjacent sample points will be less than or equal to 0.48 times the radius of the contaminated area (0.48r).

= Sample location

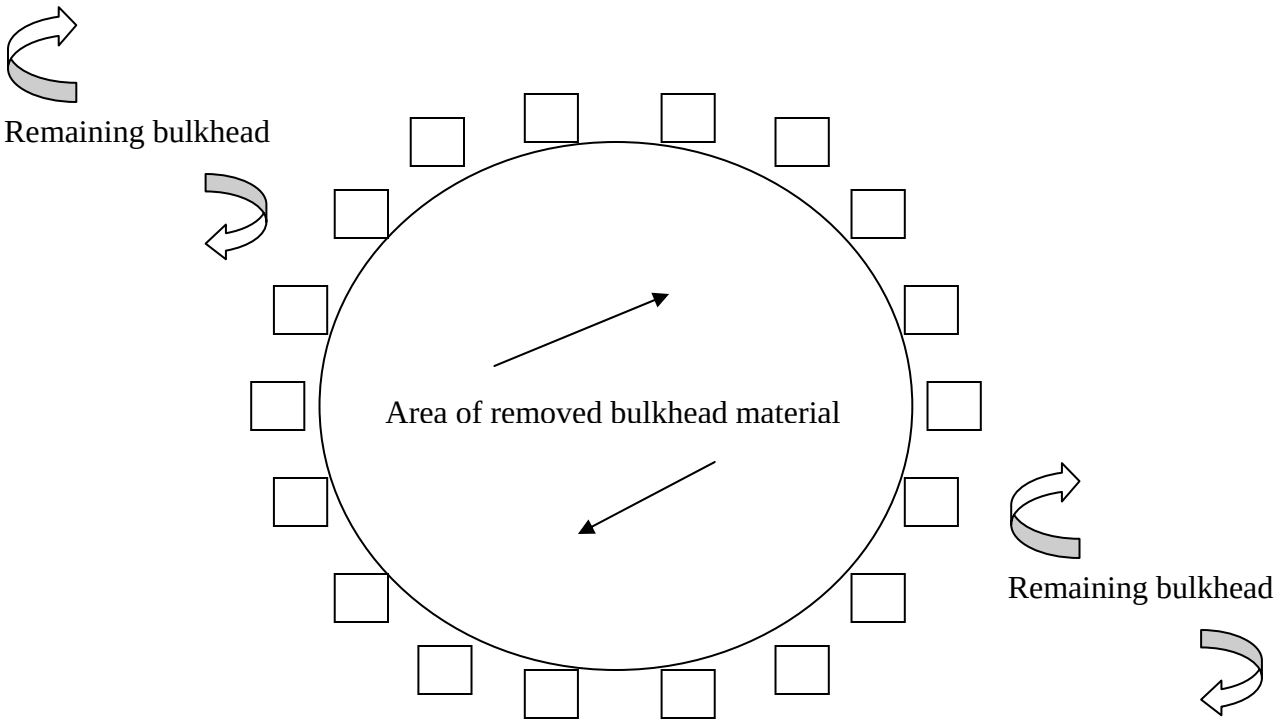

Figure 3. Location of sampling points in an 18-point grid where the outer boundary of the contaminated area is more than 10-feet but less than 20-feet from the center. The distance between adjacent sample points will be less than or equal to 0.30 times the radius of the contaminated area (0.30r).

= Sample location